

The Life-longevity of Digital Publications

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When I started to look at the problem of the deterioration of acid paper in libraries, something that happens over a time span of some 50 to 100 years, I reflected that the life-longevity of recorded media, a product of our civilization, seemed to become progressively shorter over time. This may not be absolutely correct, but when stone, metal, cloth, parchment, Japanese paper, linen- and cotton-based paper, wood-pulp paper are arranged in chronological order of their birth, it seems there would be some evidence there.

The most important reason for the reduced life-longevity of recording media is the increase in audience demand and the development of new recording materials. So it may be reasonable to suggest that the number of accesses (book usage) is in inverse proportion to the life-longevity of the media.

Fortunately however, due to the efforts of publishers and paper manufacturers in Japan, short-life acid-paper books have almost completely been replaced now with neutralized paper books that should survive for several hundred years. Acid-paper book production that had been practiced for a century since the Meiji era has now been almost completely superseded by book production using neutralized paper. This was carried out in accordance with the process of problem identification, social recognition and technological responsibility. The success of this process can be attributed to the will and technologies of those concerned. It was an important example of thinking ahead for future needs.

While I felt relief at the solution of the acid paper problem, I was absorbed next by the new waves of digital publication and the Internet. This is said to be the greatest innovation since Gutenberg (movable type printing). The distribution of literature by digital technologies and

telecommunication networks is extremely attractive and has great potential.

Among other things, the rapidity and extensive scope of information transmission throughout the world is fantastic. Anyone in the world can access this journal "Literature" immediately on publication if it is offered on the Internet. People can read past issues of publications at home or in office, while searching on related topics as well as authors' related articles on the Internet. Readers who don't understand Japanese can use automatic translation software. Readers can exchange opinions regarding the articles they read on the Web. As a result, the scope of access and communication can be dramatically expanded to improve research and scholarship .

Let's set aside the question of the benefit of digital publications for a while, and discuss their permanency. This is an issue that cannot be avoided by libraries whose responsibility is to accumulate literature and records and guarantee access to them for a long periods of time.

In addition to conventional books and magazines , the National Diet Library is instituting a program to collect CD-ROMs, DVDs and other electronic packaged publications by way of legal deposit system and to store them as examples of national publication culture. There would be no gain saying that digital publications will be treated in the same way as paper publications.

With regard to the preservation of collected digital publications, their physical durability is uncertain. Some manufacturers guarantee 10 years while others 30 years. I have once come across a claim of "100-year guarantee century media." However, it is generally accepted that the life-longevity is about 30 years at the longest, far shorter than that of acid paper, though it may depend on the material used or type of media, such as magnetic or optical disk. In addition, digital publications are useless without appropriate hardware. As we know, computer-readable media need software and hardware for replay and reading. These become rapidly outdated due to ever-evolving technological innovations. In addition, there is the question of literature and information on the Internet. Long-term preservation of digital publications involves very difficult questions about how to deal with such media and what should be preserved.

Therefore libraries are in a quandary. They are now challenged by a serious problem with

regard to their responsibility to collect, organize, store and offer literature and information to users.

How will it be possible to provide access to digital publications and other on-line journals in the form of CD-ROMs and on the Internet in 50 or 100 years time? What organizations should store and make available to users what literature and other information under what system or mechanism or with what technologies?

Towards this global issue, various approaches have been taken in the USA, Europe and Australia. In order to collect and store such media, Norway decided to make both package and network digital information the objects of legal deposit system . Sweden adopted a policy of collecting all digital information circulated on networks by the national library. The US is pursuing a decentralized scheme of storing certain academic digital information participated by different university libraries, while Australia is promoting a centralized project to select and store academic digital information by the national library.

Regarding the technical means of preserving digital records, the following options are now being discussed.

- Saving digital information in a fixed form on paper or microfilms.
- Storing the recording media together with contemporary software and hardware to keep them available for users.
- Transcribing data onto media that are durable for longer periods.
- Transplanting data and software progressively onto new formats (migration).
- Developing hardware-compatible replay environments (emulation).

In relation to each option, it is important to solve not only the problem of technical feasibility, but also costs and copyright issues related to transcription. Measures have just started to be taken for this new issue and there is a long way to go.

When people came to understand the problem of acid paper, they were warned that books would actually disappear during the 20th century, due to the fragility of paper, causing

serious intellectual devastation for the next generation. However the real risk of intellectual devastation lies in the 21st century with the flourishing of digital culture. What can we do to prevent this devastation? As in the problem of acid paper, writers, publishers, producers, information engineers, electronics manufacturers and information users all need to get together to discuss to resolve the problem.

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Note: The above was a translation of Mr. Yasue's paper with his permission, which was appeared on the March-April 2000's issue of the journal titled "Bungaku (Literature)."